UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,649	12/29/2000	Ashok Singhal	M-8495 US	9244

32566   7590   02/09/2006

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EXAMINER
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ART UNIT	PAPER NUMBER
2138	

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 10-13* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 10-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☑ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date *11/3/05*

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-6 and 10-13 are currently pending. Claims 4-9 are cancelled.

Election/Restrictions

2.   Applicant's election without traverse of invention Group I, claims 1-3 and 10-12 in

the reply filed on 11/03/2005 is acknowledged.

Claim Objections

3. .   In view of the amended claims, the objection to claim 13 in the prior Office Action

is withdrawn.

Claim Rejections - 35 USC § 112

4.   The U.S.C. 112, second paragraph rejection of claim 13 has been withdrawn in

view of the amended claims.

Response to Arguments

5.   Applicant's arguments filed 11/03/2005 have been fully considered but they are

not persuasive.

The Applicant summarizes the teachings of Steely, Jr. et al. in that "the DMA

operation transfers data from the MC adaptor 90 to either system memory 87 or a disk

92 in node 85. The Applicant also submitted a 132 Declaration supporting the

Applicant's reading of Steely, Jr. et al. Upon careful consideration of the Declaration,

the Examiner finds that the declaration is defective because the Applicant has not

shown how the declaration of Michel Cekleov relates to the claim language. The

Applicant has only provided the declaration to support the Applicant's understanding of

Steely, Jr. et al.

The Examiner agrees with the Applicant's understanding of Steely, Jr. et al, but

would like to emphasize that Steely still reads on the claim language of the present

application as discussed in the prior Office Action. In response to the Applicant's

argument that Steely does not teach the limitation, "a direct memory access (DMA)

command for writing a block of data from a local node to a remote node via one of the

communication links", the Examiner would like to clarify that these limitations are taught

by Steely.

Steely teaches "writing a block of data from a local node to a remote node via

one of the communication links" in col. 7, lines 23-26. In particular, data is provided

from the transmit FIFO 103 in node 75 and propagated through communication link 84

to node 85. A write command for performing the above action is explained in col. 6,

lines 6-8 with reference to Fig. 5. Given the broadest reasonable interpretation of the

claim, the write command is a direct memory access (DMA) command because a DMA

operation is performed at the receiving node after the data is transferred from the

sending node to the receiving node as detailed by Steely in col. 7, lines 29-32. In other

words, the above recitation of claim 1 requires a "command for writing a block of data

from a local node to a remote node via one of the communication links". The "direct

memory access (DMA)" in the recitation is just an adjective that modifies the "command"

by describing a specific type of command. Thus, the "command" can be called a DMA

command by one of ordinary skill in the art because it results in a DMA operation being

performed.

The Applicant argues with respect to claim 1 that Steely is silent on "a memory

copy write command for writing an entire line of memory from a local node to a remote

node via the communication link when a new data is written into the line of memory

even when the new data is smaller than the line of memory". Similarly, the Applicant

argues with to claim 12 that Steely or Grivna do not disclose, "merging the new data

with the existing data so the new data replaces some existing data while other existing

data remains".

Steely teaches a reflective write in col. 7, lines 13-15, in which written data in a

local node is communicated to a remote node. Steely is indeed silent on whether an

entire line of memory is reflected. However, the Examiner notes that a recitation of the

intended use of the claimed invention must result in a structural difference between the

claimed invention and the prior art in order to patentably distinguish the claimed

invention from the prior art. If the prior art structure is capable of performing the

intended use, then it meets the claim.

In this case the structure of Steely is perfectly capable of performing the intended

use of "writing an entire line of memory from a local node to a remote node via the

communication link when a new data is written into the line of memory even when the

new data is smaller than the line of memory". For example, if an entire line of memory were written to the appropriate address space in the system of Steely, then that line of memory would be reflected to a remote node. Therefore the ability to reflect an entire line of memory is present in Steely, regardless of whether or not the written data is smaller than the line of memory. If data smaller than the line of memory were written, then surely the system of Steely would be able to reflect an entire line of memory. Since the system of Steely is capable of performing the function without a structural change, it meets the limitations.

In response to the Applicant's arguments regarding claim 11 that the prior art systems use two operations to send parity to a remote node, the Examiner asserts that Steely teaches, "computing parity over multiple blocks of data from a local memory of the local node and writing the parity to a remote memory of the remote node in a single operation." Steely states that parity from a local node is computed and written at the remote node in a single operation in col. 6, lines 37-39.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating
              obviousness or nonobviousness.

6.   Claims 1-3, 10, and 12-13 rejected under 35 U.S.C. 103(a) as being

unpatentable over Steely, Jr. et al (US Pat. 6,049,889; hereafter referred to as Steely) in

view of Grivna (US Pat. 5,850,556).

As per claim 1:

Steely teaches a communication link protocol for communicating between nodes

of an interconnect system via a communication link, the communication link protocol

comprising:

- a direct memory access (DMA) command for writing a block of data from a local

  node to a remote node via the communication link (col. 7, lines 26-32);

- an administrative write command for writing data from a local node to registers in

  a remote node via the communication link for administrative purposes (col. 5,

  lines 36-45);

- a memory copy write command for writing a line of memory from a local node to

  a remote node via the communication link when any data is written into that line

  of memory (col. 6, lines 46-47; col. 7, lines 13-15).

Not explicitly disclosed by Steely is a built in self test (BIST) command for testing the functionality of the communication link. However, Grivna teaches a communication system which uses a BIST testing logic for testing the functionality of the communication link (col. 6, lines 52-56). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine a BIST testing architecture as described by Grivna with the system of Steely to issue a BIST command for testing the functionality of the communication link. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that BIST would have provided the advantage of allowing diagnostics of the communication link, as described by Grivna in column 6, lines 52-56.

As per claim 2:

Steely and Grivna teach the communication link protocol of Claim 1 wherein each command is conveyed between a local node and a remote node in the form of a respective command packet (col. 9, lines 8-9).

As per claim 3:

Steely and Grivna teach the communication link protocol of Claim 2 wherein each respective command packet carries information for at least one command flag (col. 9, lines 18-23; the DV bits are a command flag that dictate the occurrence of an idle cycle).

As per claim 10:

Steely further teaches the communication link protocol of Claim 1, wherein said writing a block of data from a local node to a remote node comprises copying the block of data from a local memory of the local node to a remote memory of the remote node (col. 8, lines 41-43).

As per claim 12:

Steely further teaches the communication link protocol of Claim 1, wherein said writing a line of memory from a local node to a remote node comprises reading existing data from the line of memory in a local memory of the local node, merging new data with the existing data, and writing merged data to a corresponding line of memory in a remote memory of the remote node (col. 6, lines 36-42; Steely discloses parity computation and checking at the nodes. Parity is computed at the transmitting node by reading existing data and merging newly computed parity data with the existing data. The merged data comprising the data with its parity bits are then transmitted to the receiver).

As per claim 13:

Steely further teaches the communication link protocol of claim 12 above, wherein said writing a line of memory from a local node to a remote node comprises the writing the line of memory to a remote node using a same address offset of the line of memory at the local node (col. 4, lines 16-21).

7.   Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Steely in

view of Grivna as applied to claim 1 above, and further in view of Gunsaulus et al (US

Pat. 5,914,970; hereinafter referred to as Gunsualus).

As per claim 11:

        Steely and Grivna teach the communication link protocol of claim 1 above. Not

explicitly disclosed is said writing a block of data from a local node to a remote node

comprises computing parity over multiple blocks of data from a local memory of the

local node and writing the parity to a remote memory of the remote node. However,

Gunsaulus in an analogous art teaches computing parity for a number of memory

devices and writing the parity in one dedicated memory device (col. 1, lines 46-52).

        Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to compute parity over multiple blocks of data and

write the parity to a remote memory of the remote node. This modification would have

been obvious to one of ordinary skill in the art, at the time the invention was made,

because one of ordinary skill in the art would have recognized that using one memory

device for parity storage reduces the number of memory devices needed for storing

parity, as disclosed by Gunsaulus in col. 1, lines 52-55.
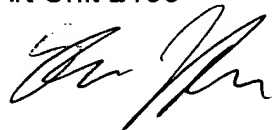

Conclusion

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Steve Nguyen whose telephone number is (571) 272-

7214. The examiner can normally be reached on M-F, 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Steve Nguyen
Examiner
Art Unit 2138

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